

Amendments to the Claims

This listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims

1. (Currently Amended) A method of producing a carbide-containing ferroalloy welding consumable material for subsequent use for producing a hardfacing on a suitable substrate comprising the steps of:

- (a) ~~forming~~ melting at least two solid feed powders to form a homogeneous melt, ~~that has~~ the homogeneous melt having a required concentration of ~~key elements, such as~~ carbon, chromium and ~~manganese~~, manganese for a chromium carbide-containing ferroalloy welding consumable material; and
- (b) forming a solid carbide-containing ferroalloy welding consumable material from the melt.

2. (Cancelled)

3. (Currently Amended) The method of claim 1 wherein step (a) comprises forming the homogeneous melt ~~[[from]]~~ with a chromium-containing ferroalloy material.

4. (Currently Amended) The method of claim 1 wherein step (a) comprises forming the homogeneous melt ~~[[from]]~~ with a source of free carbon.

5. (Previously Presented) The method of claim 1 wherein step (a) comprises adding graphite to the melt to supersaturate the melt with carbon.

6. (Currently Amended) The method of claim 1 wherein step (a) comprises forming the homogeneous melt ~~[[from]]~~ with an iron-containing material (other than a chromium-containing ferroalloy) ~~such as scrap steel or scrap high chromium white cast iron~~, to dilute the chromium concentration in the melt.

7. (Previously Presented) The method of claim 1 wherein step (a) comprises holding a melt temperature to dissolve carbon in the melt to produce a required concentration of chemically combined carbon in the solid ferroalloy welding consumable material formed from the melt in step (b).

8. (Previously Presented) The method of claim 1 comprising de-gassing the melt formed in step (a) so that the solid ferroalloy welding consumable material formed in step (b) facilitates a stable welding arc in a subsequent hardfacing operation and thereby minimises porosity in the resultant hardfacing and eliminates ejection of ferroalloy powder from the weld pool.

9. (Previously Presented) The method of claim 1 comprising removing slag from the melt formed in step (a) so that the solid ferroalloy welding consumable material formed in step (b) minimises the presence of non-metallic impurities in the resultant hardfacing weld deposit formed in the subsequent hardfacing operation.

10. (Currently Amended) The method of claim 1 wherein the ferroalloy welding consumable material ~~having~~ has a chromium/carbon ratio less than 7.0.

11. (Currently Amended) The method of claim 1 ~~whereon~~ wherein the ferroalloy welding consumable material has chromium content in the range 30-65 ~~weight%~~ % by weight.

12. (Currently Amended) The method of claim 1 wherein the ferroalloy welding consumable material has a chemically combined carbon content greater than 7.5 ~~weight%~~ % by weight

13. (Previously Presented) The method of claim 1 wherein step (b) comprises casting the melt into a suitable mould(s) or other casting means and thereafter breaking up the cast product into a suitable form, such as powder form.

14. (Currently Amended) The method of claim 1 wherein step (b) comprises atomising the melt with a suitable gas, ~~such as argon,~~ to form solid powder from the melt.

15. (Previously Presented) A chromium carbide-containing ferroalloy welding consumable material produced by the method of claim 1.

16. (Previously Presented) The material of claim 15 wherein the chromium/carbon ratio is less than 7.0.

17. (Currently Amended) The material of claim 15 wherein the chromium content is in the range 30-65 ~~weight%~~ % by weight.

18. (Currently Amended) The material of claim 15 wherein the chemically combined carbon content is greater than 7.5 ~~weight%~~ % by weight.

19. (Previously Presented) A method of producing a hardfacing weld deposit on a suitable substrate comprising forming a weld pool of the chromium carbide-containing ferroalloy welding consumable material of claim 15 and a welding wire material on a substrate and thereafter depositing a hardfacing weld deposit of material from the weld pool on the substrate.

20. (Original) A hardfacing weld deposit on a suitable substrate produced by the method defined in claim 19.

21. (Previously Presented) The weld deposit of claim 20 comprising a chromium/carbon ratio of less than 7.0.

22. (Currently Amended) The weld deposit of claim 20 comprising a chromium content of less than 35 ~~weight%~~ % by weight.

23. (Currently Amended) The weld deposit of claim 20 comprising a combined carbon content greater than 4.0 ~~weight%~~ % by weight.

24. (Currently Amended) The weld deposit ~~defined in~~ of claim 23 comprising tungsten and/or vanadium and/or titanium and/or molybdenum and/or niobium and/or boron up to a maximum of 15 ~~weight%~~ % by weight.

25. (New) The weld deposit of claim 6, wherein the iron-containing material is selected from the group consisting of scrap steel and scrap high chromium white cast iron.

Applicant : Kevin Francis Dolman
Serial No. : 10/598,058
Filed : April 19, 2007
Page : 6 of 10

Attorney's Docket No.: 21503-
0002US1 / GRM:AL:FRP24422

26. (New) The weld deposit of claim 14, wherein the suitable gas is argon.